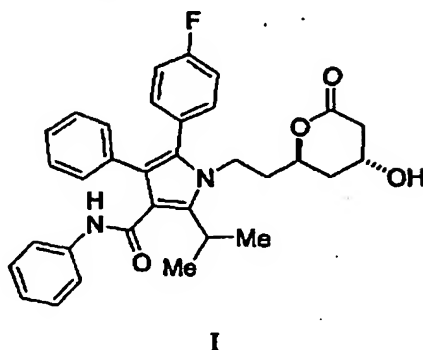



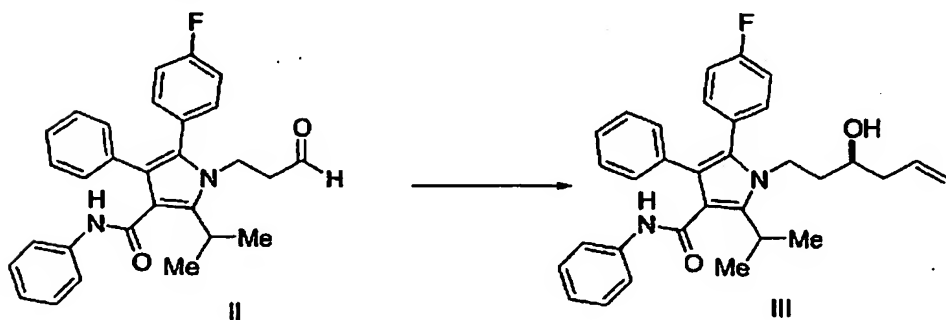
# CLAIMS

1. A process for preparing a compound of formula (I)

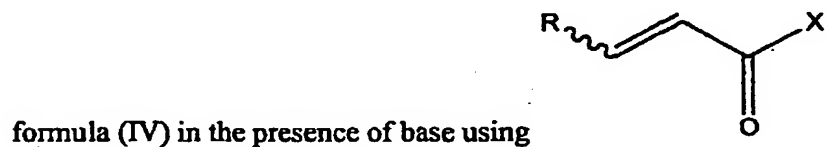


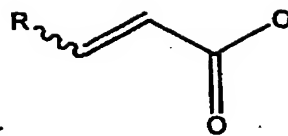
comprising:

- (a) contacting in a solvent optionally in the presence of a chiral Lewis acid a compound of formula (II) with , wherein M is SiCl<sub>3</sub>, SiMe<sub>3</sub>, B(OH)<sub>2</sub>, CuLi, MgBr, ZnBr, InBr, SnR<sub>3</sub> wherein R<sub>3</sub> is (C<sub>1</sub>-C<sub>6</sub>)alkyl, to give a compound of formula (III):

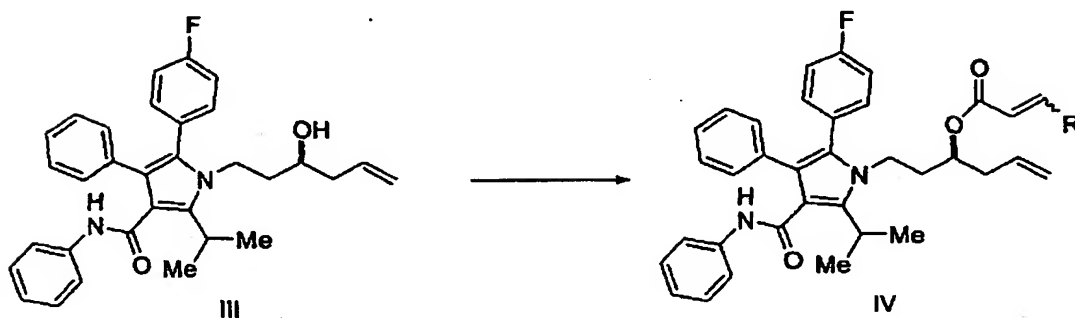


- (b) conversion of the compound of formula (III) to an acryloyl ester of

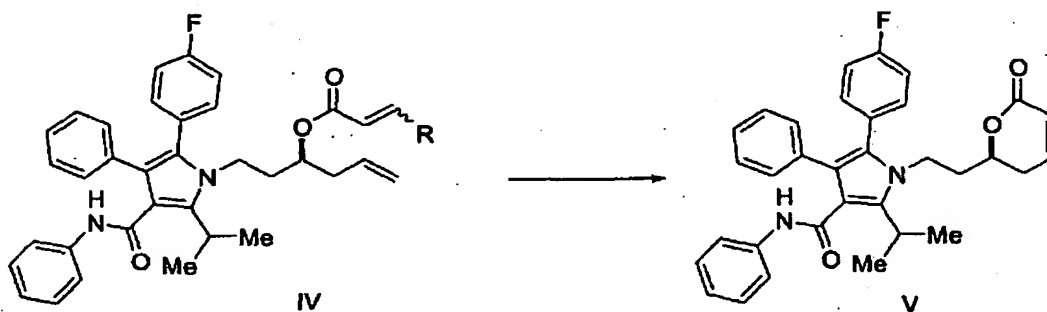




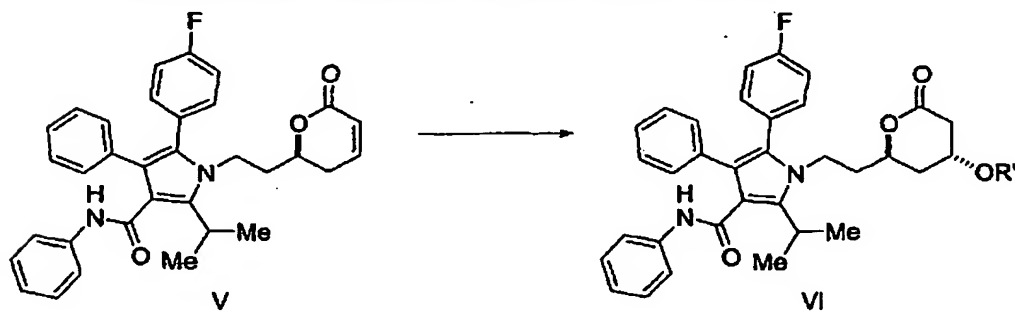
wherein X is Cl, Br, I, or  $\text{C}_6\text{H}_4\text{X}$ , and R is H,  $\text{C}_1\text{-C}_6$ alkyl, or phenyl, or an acryloyl activated ester equivalent:



- (c) contacting in a solvent the acryloyl ester (IV) with a catalyst to afford 5,6 dihydro pyran-2-one V:



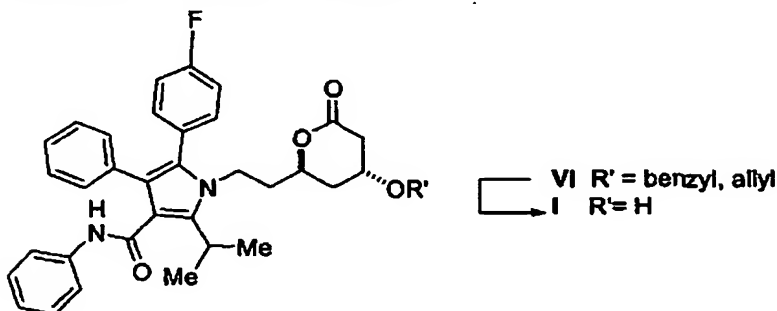
- (d) converting the compound of formula (V) to a compound of formula (VI) via facial selective 1,4 addition of allyl or benzyl alcohol:




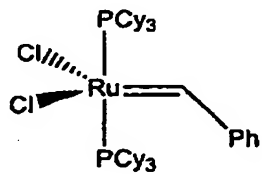
R' = benzyl, allyl

and

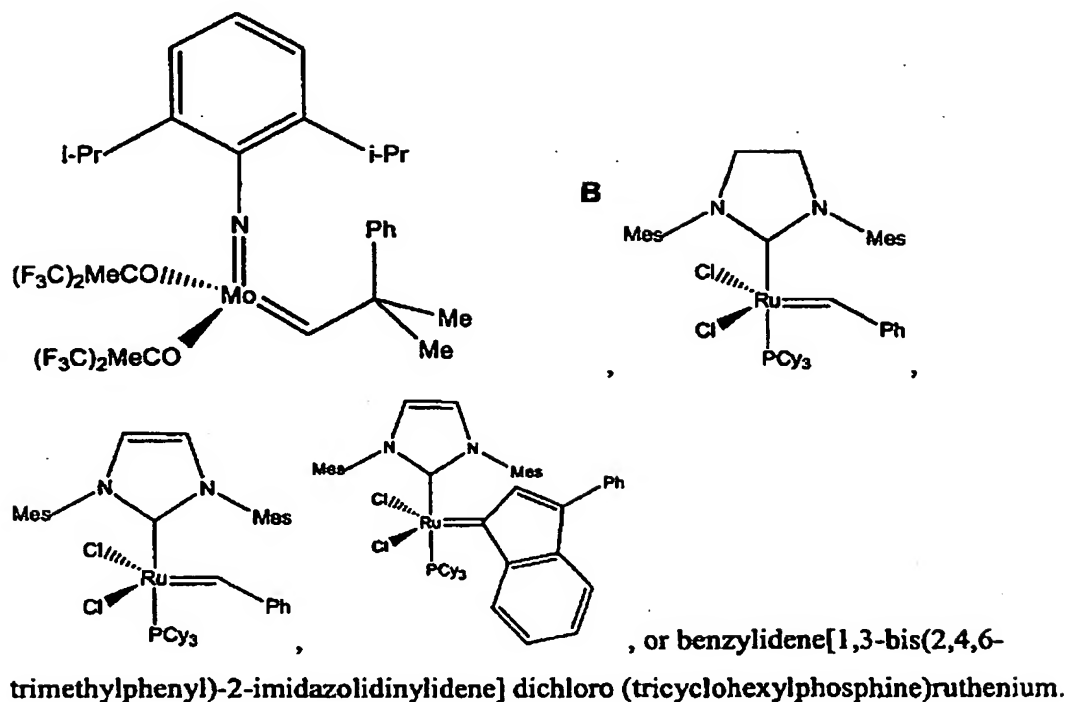
- (e) removal of the allyl or benzyl moiety in the compound of formula (VI) via hydrogenolysis to give a compound of formula I:



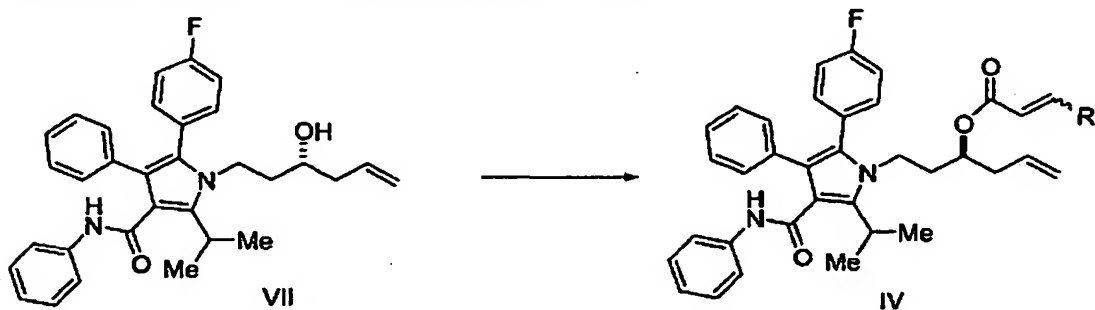
2. The process of step (a) of claim 1, wherein  is allyl tri-*n*-butylstannane, allyl trimethylsilane, allyltrichlorosilane, allyl magnesium bromide, or allyl zinc bromide, optionally used in the presence of an amino alcohol or diamine or a Lewis Base.
3. The process of step (a) of claim 1 carried out in the presence of a chiral Lewis acid, optionally generated in situ from boron tribromide and (S,S)-1,2-diamino-1,2-diphenylethane *bis*-toluenesulfonamide.
4. The process of step (b) of claim 1 wherein the base is an amine base selected from the group consisting of triethyl amine, N,N dimethyl amino pyridine, DBU, and DBN optionally in the presence of a catalytic amount of DMAP and the polar nonprotic solvent is dichloromethane.




5. The process of step (c) of claim 1, wherein the catalyst is

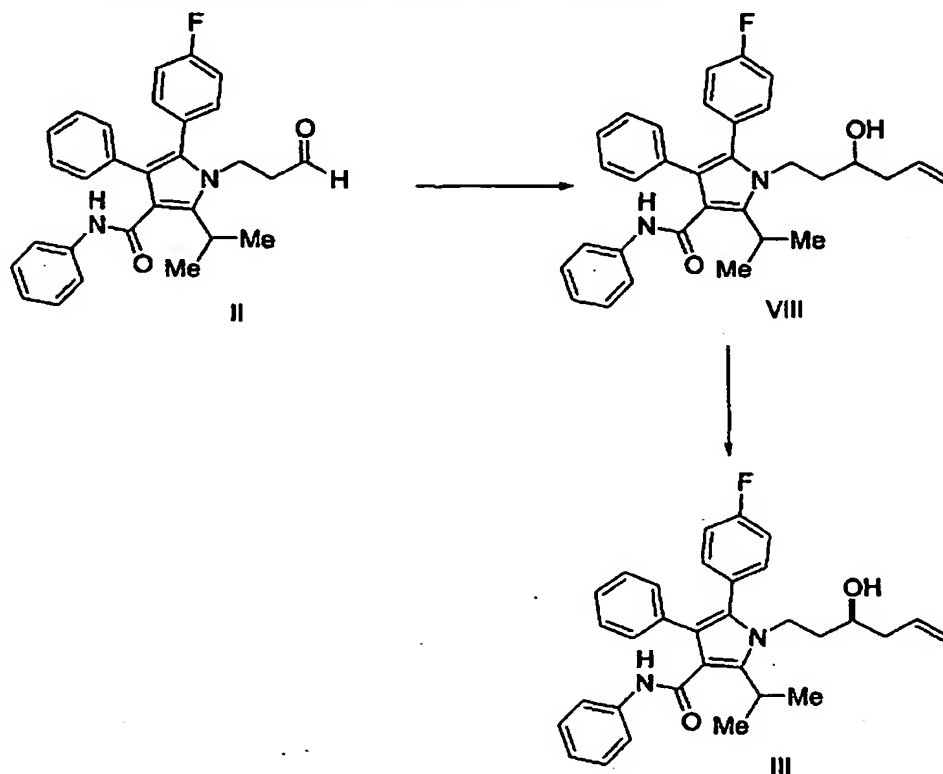


6. A process for preparing the compound of formula IV, comprising converting a compound of formula VII via displacement reaction:

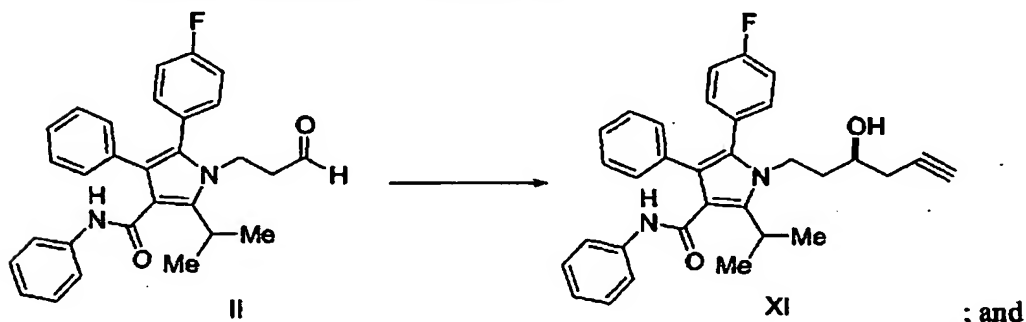


7. A process for preparing a compound of formula III comprising
- (a) contacting in a solvent optionally in the presence of a nonchiral Lewis acid a compound of formula (II) with , wherein M is SiCl<sub>3</sub>, SiMe<sub>3</sub>, B(OH)<sub>2</sub>, CuLi, MgBr, ZnBr, InBr, SnR<sub>3</sub> wherein R<sub>3</sub> is (C<sub>1</sub>-C<sub>6</sub>)alkyl, to give a

compound of formula VIII, followed by isolation of the compound of formula III via chromatographic separation or resolution:

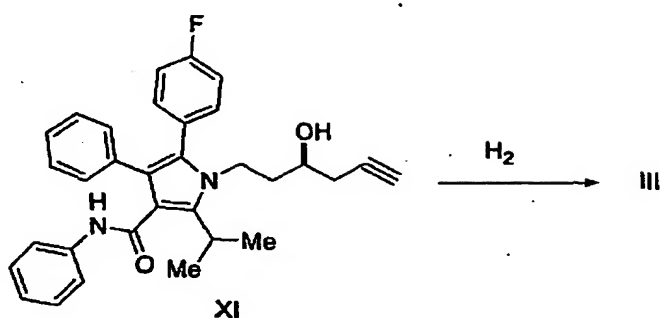


8. A process for preparing a compound of formula III as recited in claim 1, comprising:
- (a) contacting (II) with an allenylboronic ester in the presence of a chiral auxiliary to give a compound of formula (XI):



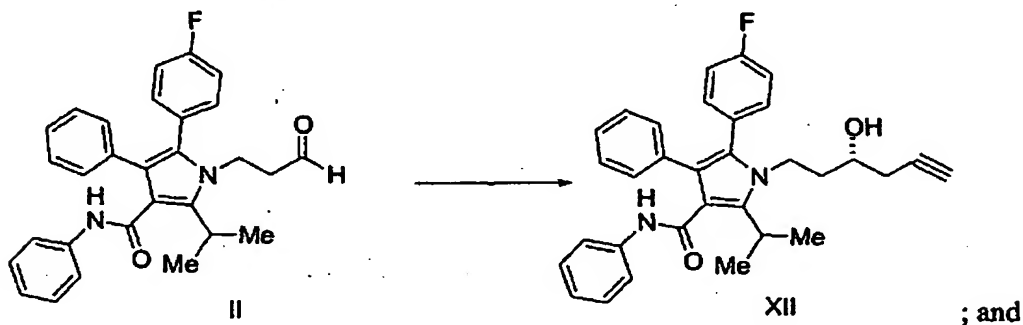
; and

- (b) hydrogenation of the compound of formula (XI) to provide III

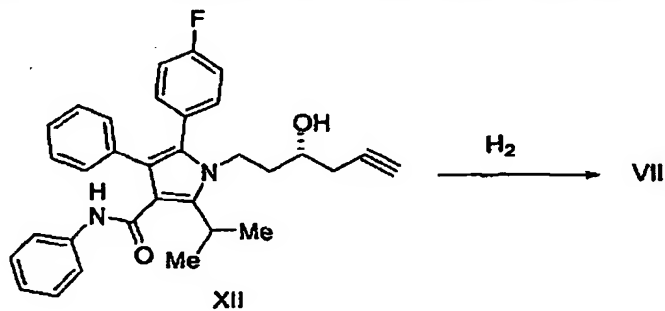


9. A process for preparing the compound of formula VII as recited in claim 6, comprising:

- (a) contacting compound (II) with an allenylboronic ester in the presence of a chiral auxiliary to give a compound of formula (XII):

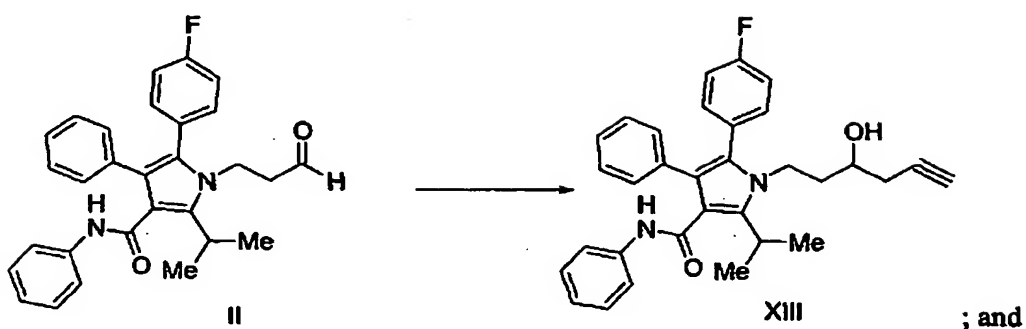


- (b) hydrogenation of the compound of formula (XII) to provide VII

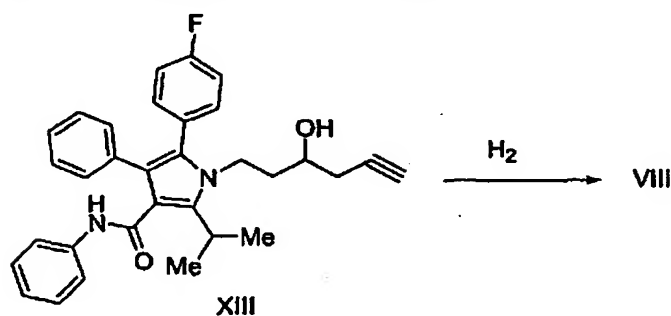


10. A process for preparing a compound of formula VIII as recited in claim 7, comprising:

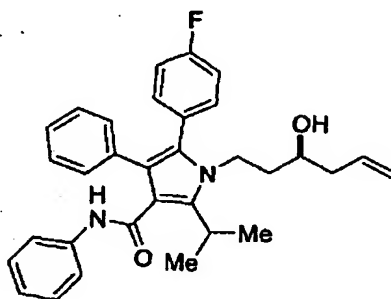
- (a) contacting (II) with allenylboronic acid or an allenylboronic ester to give a compound of formula (XIII):



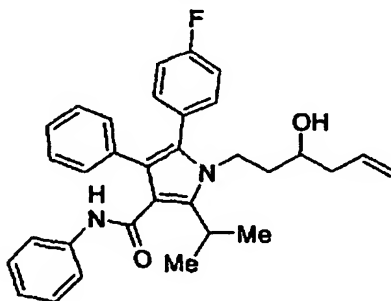
(b) hydrogenation of the compound of formula (XIII) to provide VIII



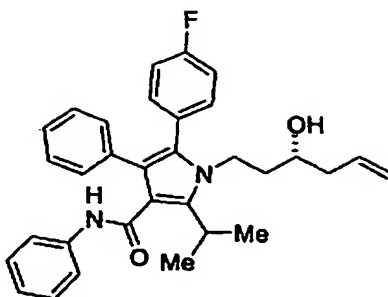
11. Compounds of the following formulae:



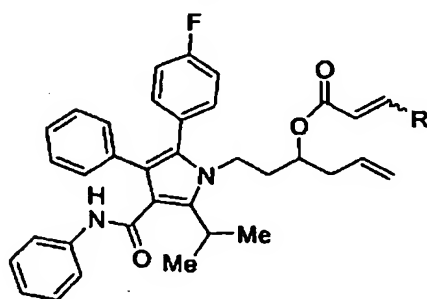
;



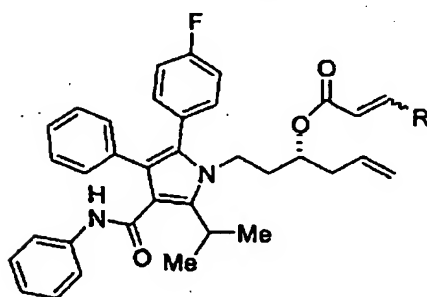
;



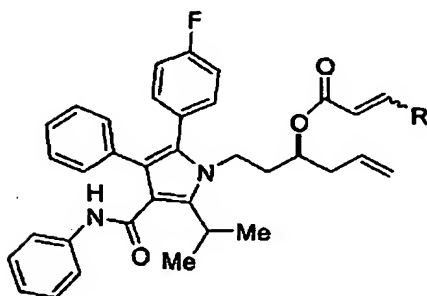
VII



IX, wherein R is H, (C<sub>1</sub>-C<sub>6</sub>)alkyl, or phenyl;



X, wherein R is H, (C<sub>1</sub>-C<sub>6</sub>)alkyl, or phenyl;



IV, wherein R is H, (C<sub>1</sub>-C<sub>6</sub>)alkyl, or phenyl;



